WE CLAIM:

1. A method for determining a formation profile surrounding a well bore, comprising the steps of:

(a) receiving field log data for a formation surrounding the well bore;

(b) generating a Jacobian matrix responsive to the field log data;

(c) solving for a new formation conductivity profile using the Jacobian matrix;

(d) calculating a new log response using the new formation conductivity profile;

(e) determining if the log response converges with the received field log data;

(f) performing a quasi-Newton update of the Jacobian matrix and repeating step (c) and (e) if the log response does not converge with the received field log data; and

(g) outputting the formation profile based upon the log response if the log response converges with the received field log data.

2. The method of Claim 1, wherein the step of generating further comprises the steps of:

determining an initial vector from the field log data, said initial vector being at least one of a conductivity or resistivity vector; and

generating the Jacobian matrix using a sliding window and the initial vector.

3. The method of Claim 2, wherein the method of generating the Jacobian matrix using the sliding window further comprises the steps of:

determining a single column vector of the Jacobian matrix based on a three-bed formation; and

sliding the single column vector across the formation to populate the Jacobian matrix.

4. The method of Claim 1, further including the step of applying a maximum flatness inversion algorithm to the received field log data.

5. The method of Claim 1, wherein the step of determining further comprises the step of comparing the determined log response to the received field log data to determine any differences therebetween.

6. The method of Claim 1, wherein the step of performing further comprises the step of performing a quasi-Newton update responsive to the determined log response and a presently existing Jacobian matrix.

7. A method for determining a formation profile surrounding a well bore, comprising the steps of:

(a) receiving field log data for a formation surrounding the well bore;

(b) determining an initial vector from the field log data, said initial vector being a conductivity or resistivity vector;

(c) generating the Jacobian matrix using a sliding window and the initial vector;

(d) solving for a formation conductivity vector using the Jacobian matrix with maximum flatness constraint;

(e) calculating a log response using the new formation conductivity vector;

(f) determining if the log response converges with the received field log data;

(g) performing a quasi-Newton update of the Jacobian matrix and repeating step (d) and (f) if the log response does not converge with the received field log data; and

(h) outputting the formation profile based upon the log response if the log response converges with the received field log data.

8. The method of Claim 7, wherein the method of generating the Jacobian matrix using the sliding window further comprises the steps of:

determining a single column vector of the Jacobian matrix based on a three-bed formation; and

sliding the single column vector across the formation to populate the Jacobian matrix.

9. The method of Claim 7, wherein the step of determining further comprises the step of comparing the determined log response to the received field log data to determine any differences therebetween.

10. The method of Claim 7, wherein the step of solving further comprises performing a gradient based iterative inversion.

11. A method for determining a formation profile surrounding a well bore, comprising the steps of:

(a) receiving field log data for a formation surrounding the well bore;

(b) determining an initial vector from the field log data, said initial vector being a conductivity or resistivity vector;

(c) generating the Jacobian matrix using a sliding window and the initial vector;

(d) generating the Jacobian Matrix using a sliding window and the initial vector said step further comprising the steps of:

determining an single column vector of the Jacobian matrix using a three-bed formation; and

sliding the single column vector across the formation to populate the Jacobian matrix;

(e) solving for a formation conductivity vector using the Jacobian matrix with maximum flatness constraint;

(f) calculating a log response using the new formation conductivity vector;

(g) determining if the log response converges with the received field log data;

(h) comparing the determined log response to the received field log data to determine if the log response converges with the received field log data;

(i) performing a quasi-Newton update of the Jacobian matrix and repeating step (e) and (f) if the log response does not converge with the received field log data; and

(j) outputting the formation profile based upon the log response if the log response converges with the received field log data.